"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ing after a few more steps of computation is also given. The limiting frequency ω^*_o at $\vec{k} \to 0$ depends on the effective mass of quasiparticles and generally differs from the ordinary mass of particles. The method suggested here is suited for the determination of the spectrum of the plasma-vibrations of electrons in a periodic field in the presence of a zone. There are 3 references, 0 of which are Slavic.

ASSOCIATION: Ural Polytechnical Institute (Ural'skiy politekhnicheskiy institut)

SUBMITTED: October 26, 1957

AVAILABLE: Library of Congress

1. Quasiparticles systems-Motion

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

AUTHORS: Yeleonskiy, V. M., Zyryanov, P. S. SOV/56-34-3-48/55

TITLE: The Energy-Spectrum of a Bose-Gas (Energeticheskiy spektr Bozevskogo gaza)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 770 - 772 (USSR)

ABSTRACT: The present report investigates the problem of the determination of the energy-spectrum of a system of Bose-particles by development of the interaction kernel into a series with respect to the moments. This method is in some cases more convenient than the method of development of the interaction kernel in a Fourier's series. The Hamiltonian of the system has the form

$$H = (\hbar^2/2m)\int \nabla\psi^* \nabla\psi \, d\vec{r} + (1/2)\int \varrho(\vec{r}) G(\vec{r}-\vec{r}\,') \varrho(\vec{r}\,') d\vec{r} d\vec{r}\,'$$

in the representation of the second quantization, where $\varrho(\vec{r}) = \psi^*(\vec{r})\psi(\vec{r})$. The operator of the potential energy is reduced to the form

Card 1/4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

$(1/2)\int \varrho(\vec{r}) G(\vec{\xi}) \varrho(\vec{r}-\vec{\xi}) d\vec{r}\, d\vec{\xi}$ by introduction of the new variable $\vec{\xi} = \vec{r} - \vec{r}'$. The Hamiltonian is still further transformed and subsequently written down in a form which is accurate up to the square terms with respect to the operators. After diagonalization this square form leads for the central forces to the following eigenvalues of the energy:

$$E_k = \left\{ \left(\frac{\hbar^2 k^2}{2m}\right) \left[\frac{\hbar^2 k^2}{2m} + 4\pi\varrho \sum_{\ell=0}^{\infty} \frac{(-1)^{\ell}}{(2\ell+1)!} k^{2\ell} \int_0^{\infty} G(\xi)\, \xi^{2\ell+2} d\xi \right] \right\}^{1/2}$$

With absolutely solid spheric particles with the diameter a the authors put $G(\xi) = (\hbar^2/ma^2)\,\delta(\xi - a)$ under the condition of repulsive forces and then the above-mentioned equation for E_k furnishes the results obtained by K. A. Brueckner and K. Sawada (Reference 1):

$$E(x) = \left(\frac{\hbar^2}{2ma^2}\right) x \left[x^2 + 2\lambda^2 \frac{\sin x}{x} \right]^{1/2}.$$

Here $x = ka$, $\lambda^2 = 8\pi\varrho a^3$. The weak attractive forces between the helium-atoms were not taken into account in 2 previous works dealing with the same subject (References

Card 2/4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

The Energy-Spectrum of a Bose-Gas

1, 2). They can be easily taken into consideration in the simplest case if the potential of the attractive forces is still added to the above-mentioned term for $G(\xi)$. The authors apply here the term

$$G(\xi) = (\hbar^2/ma^2)\,\delta(\xi - a) - U_o\,\eta(\xi), \text{ where } \eta(\xi) = \begin{cases} 0, & \xi < a \\ 1, & a < \xi < b \\ 0, & \xi > b. \end{cases}$$

In this case U_o denotes the depth of the potential-pot and b - a = d is its width. If the binding energy corresponding to one He^4-atom (at a temperature near to absolute zero) is known, a correlation between the binding energy, the width and the depth of the potential-pot can be determined by using the known results of quantum mechanics. Then, only one parameter occurs in the energy spectrum of the system (apart from ϱ and a). The formulae for the correlation and for the corresponding energy spectrum are written down here. There are 3 references, 1 of which is Soviet.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

SOV/56-34-3-48/55

The Energy-Spectrum of a Bose-Gas

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: December 6, 1957

Card 4/4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24 (5)

AUTHOR: Zyryanov, P. S. SOV/56-35-2-19/60

TITLE: Generalized Equations With a Self-Consistent Field (Obobshchennyye uravneniya s samosoglasovannym polem)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 2, pp 448-451 (USSR)

ABSTRACT: In an earlier paper (Ref 1) the author suggested that in systems of interacting particles fluctuations of density be subdivided into fine-scale- and large-scale fluctuations. In condensed systems large-scale fluctuations describe modifications of density in spatial domains, the linear measurements of which by far exceed the distance between particles; density fluctuations in spatial domains with linear measurements which are smaller than or equal to the average distance between particles describe the "fine-scale" fluctuations. A description of "large-scale" fluctuations is successfully accomplished by means of Hartree's (Khartri) self-consistent field. Basing upon a Hartree equation generalized for the case of non-steady states by Zyryanov (Ref 2) it is possible to describe the short-range scattering of particles as a source of momentum-interaction. In this

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

connection a modification of the generalized Hartree-equation is given and discussed. Furthermore, the results obtained are compared with the theory developed by Landau and Silin (Refs 3 - 5). Also the dispersion ratios for Fermi- and Bose-systems of interacting particles are derived. There are 9 references, 7 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: March 19, 1958 (initially) and April 24, 1958 (after revision)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24(3) SOV/56-35-6-22/44

AUTHORS: Skrotskiy, G. V., Zyryanov, P. S., Izyumov, T. G.

TITLE: The Influence of Paramagnetic Electron Resonance on the Optical Effect of Faraday at Low Temperatures (Vliyaniye elektronnogo paramagnitnogo rezonansa na opticheskiy effekt Faradeya pri nizkikh temperaturakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1471-1474 (USSR)

ABSTRACT: Daniels and Wesemeyer (Daniyels, Vezemeyer)(Ref 1) experimentally investigated the influence exercised by magnetic resonance on the optical Faraday (Faradey) effect. They worked with neodymium ethylene sulfate single crystals at 1.5°K, 9060 megacycles, and 5461 Å. Kastler (Ref 2) was the first to investigate the connection between Faraday effect and paramagnetic resonance, and Opechowski (Opekhovskiy) (Ref 3) carried out the respective quantum-mechanical calculations. The results obtained are discussed in the introduction. The authors of the present paper investigated these phenomena on the basis of the usual macroscopical theory; an explicit expression is derived for the angle of rotation of the polarization plane of a light wave near paramagnetic resonance in a

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

SOV/56-35-6-22/44

The Influence of Paramagnetic Electron Resonance on the Optical Effect of Faraday at Low Temperatures

radio-frequency field which is weak in comparison to the constant magnetic field H_o. The influence of paramagnetic resonance on the optical effect is based upon spin-orbit interactions. The dielectric constant characterizes the optical properties, and as the state of the spin system varies considerably within range of paramagnetic resonance, a change of the state of the spin system (in consideration of spin-orbit coupling) leads to a variation of the dielectric constant, which fact explains the influence exercised upon optical properties. Theoretically, the problem was dealt with according to the method outlined in reference 4. The ansatz for the specific angle of rotation of the polarization plane is, according to Vol'kenshteyn (Ref 5) the following:

$\Theta = (\omega/4c)\ (n_-^2 - n_+^2)/n$, where the refraction index $n_{\pm}$ is ck/ω for right-handed and left-handed circularly polarized waves respectively. The following approximated solution is obtained: $\Theta = (2\pi\gamma/c)nM_{oz}$ (see figure). For strong radio-frequency fields there is only qualitative agreement between this formula and the experiments. There are 1 figure and 5 references,

Card 2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

SOV/56-35-6-22/44

The Influence of Paramagnetic Electron Resonance on the Optical Effect of Faraday at Low Temperatures

2 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: June 19, 1958

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24(5) SOV/56-35-6-32/44

AUTHORS: Giterman, M. Sh., Zyryanov, P. S., Taluts, G. G.

TITLE: Bose-Excitations in Ion Crystals (Bozevskiye vozbuzhdeniya v ionnykh kristallakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1532-1537 (USSR)

ABSTRACT: The interaction between exciton and lattice oscillations has already frequently been investigated. Exciton energy and the connection between exciton-phonon interaction and the internal state of the exciton was investigated for strong coupling by S. I. Pekar and I. M. Dykman (Ref 1) as well as by V. A. Moskalenko (Ref 2) who used the method developed by N. N. Bogolyubov (Ref 3); for the case of intermediate coupling it was investigated by I. P. Ipatova (Ref 4) by the method developed by Lee, Low and Pines (Li, Lou, Payns) (Ref 5) and for weak coupling by I. M. Dykman (Ref 6), as well as by Moskalenko (Ref 7) and Haken (Khaken) (Ref 8). The authors of the present paper consider excitons to be elementary excitations in a multi-electron system, which interact with the lattice. The Hamiltonian of the system consists of three parts:

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

Bose-Excitations in Ion Crystals SOV/56-35-6-32/44

$H = H_{el} + H_{ph} + H_{int}$ - the first term corresponds to the electrons, the second to the phonons, and the third describes electron-phonon interaction. The energy spectrum of a weakly excited state of the system is investigated on the assumption that in every node there exists an electron which is either in the ground state ($\lambda = 0$) or in an excited state ($\lambda = 1$). The Bose (Boze) excitations of such a system of electrons (excitons) interacting with polarization vibrations of a crystal are investigated by means of the second quantization representation. First, an expression is derived for the Hamiltonian H_{el} of the multi-electron system, then one for H_{ph}, and finally one for the interaction H_{int}. It is found that in the case of weak coupling the interaction leads to a decrease of exciton energy and to an increase of the effective exciton mass. This is in agreement with the results obtained by Dykman and Moskalenko (Refs 6, 7). In conclusion, a quantitative estimate of these effects is discussed in short. The authors thank S. V. Vonsovskiy for discussing the results obtained. There are 17 references, 12 of which are Soviet.

Card 2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

Bose-Excitations in Ion Crystals SOV/56-35-6-32/44

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED: July 9, 1958

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

YELEONSKIY, V.M.; ZYRYANOV, P.S.

Theory of the energy spectrum of systems of interacting particles.
Izv.vys.ucheb.zav.; fiz. no.6:152-157 '59. (MIRA 12:4)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova.
(Particles, Elementary)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; BORISOV, B.S.; TALUTS, G.G.

Characteristic of sound distribution in metal. Fiz.met. i metalloved. 7 no.1:153-154 Ja '59. (MIRA 12:4)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova i Institut fiziki metallov AN SSSR.
(Metal crystals) (Sound--Transmission)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24.2200
24.7900

67655
SOV/126-8-6-1/24

AUTHORS: Zyryanov, P.S., Izyumova, T.G. and Skrotskiy, G.V.

TITLE: Electrical Conductivity of Ferromagnetic Metals in a Radio-Frequency Field

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6, pp 801-806 (USSR)

ABSTRACT: It is well known that ferromagnetic metals have an additional resistivity due to the interaction of conduction electrons with thermal fluctuations in the magnetization. In the case of ferromagnetic resonance, the character of the magnetization fluctuations may be altered quite considerably. The resistivity of a metallic ferromagnetic may be looked upon as consisting of three components, namely those due to the interaction of the conduction electrons with phonons and ferromagnons, and a further component due to the change in the magnetization in a radio frequency field. The temperature dependence and the order of magnitude of the first of the above three components is well known. The second component has been calculated by Turov (Ref 1) for the low temperature region, using the spin wave model; the temperature dependence of this component is in a

Card 1/3

4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

67655
SOV/126-8-6-1/24

Electrical Conductivity of Ferromagnetic Metals in a Radio-Frequency Field

qualitative agreement with experiment. The present authors attempt to set up a quantitative theory of the increase in the resistivity of ferromagnetics in a radio-frequency field. Near the ferromagnetic resonance, the energy of the radio-frequency field is transferred to spin waves having a wave number close to zero and this corresponds to an increase in the precession angle of the magnetization vector. Since in this case the magnetization remains uniform, there is no additional contribution to resistivity. However, in the case of a ferromagnetic metal in a radio-frequency field, the magnetization in the skin-layer will no longer be uniform and the radio-frequency field will tend to increase this nonuniformity and excite a spin wave with a wave number $k \sim 1/\delta$, where δ is the depth of the skin-layer. This increase in the nonuniformity of the magnetization in the skin-layer near resonance will give rise to an additional interaction of conduction electrons with the metal and hence the resistance of the skin-layer has a resonance character. The effect can be observed in thin films

Card 2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

67655

SOV/126-8-6-1/24

Electrical Conductivity of Ferromagnetic Metals in a Radio-Frequency Field

having a thic ss of the order of the skin depth. Expressions d. ·ed in the present paper hold only for temperatures considerably lower than the Curie temperature. Moreover, the analysis includes only terms which are of the first order in the amplitude of the radio-frequency field h_o so that the amplitude must be considerably smaller than the width of the ferromagnetic resonance line. It is shown that the contribution to the resistivity due to this effect is given by Eq (27). It is shown further that, near resonance, the ratio of this additional resistivity to the resistivity due to the interaction of conduction electron with phonons is of the order to $100\ h_o^2/(\Delta H)^2$ (cf Ref 2). There are 4 references, 1 of which is Soviet and 3 English.

4

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: April 13, 1959

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

21(7) SOV/56-36-1-20/62

AUTHORS: Zyryanov, P. S., Taluts, G. G.

TITLE: On Acoustic-electric Phenomena in a Degenerated Electron-ion Plasma (O zvuko-elektricheskikh yavleniyakh v vyrozhdennoy elektronno-ionnoy plazme)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 145 - 148 (USSR)

ABSTRACT: In the propagation of a longitudinal ultrasonic wave in an electron-ion plasma the amplitudes of the density of ions and electrons are different because of the great difference of the volume-compressibility of the electron liquid and the ion liquid. This fact causes an electric space charge which in turn generates a longitudinal electric field (which depends on the frequency of the ultrasonic waves). Because of the interaction of the progressing ultrasonic wave with thermal acoustic vibrations, the energy of the ultrasonic waves is absorbed and scattered. These effects can be taken into account by introducing a finite electric conductivity of the plasma, i. e. by taking into account the collisions of the electrons with the thermal vibrations of a plasma. For finite

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

On Acoustic-electric Phenomena in a Degenerated Electron-ion Plasma

SOV/56-36-1-20/62

values of σ, the energy of the longitudinal electric field will be dissipated as Joule's (Dzhoul) heat. The authors of the present paper show that this mechanism of the dissipation of ultrasonics in a metal gives the right order of magnitude for the absorption coefficient. The investigated dynamic system consists of a great number of electrons and ions in which the ultrasonic wave propagates. The basic equations of this system are given explicitly. These equations have an exact solution for a system being in a state of constant density $|\psi_{\gamma j}|^2$ = const. $\psi_{\gamma j}$ denotes the self-consistent wave function of the j[th] particle, γ = 1 corresponds to electrons and γ = 2 to ions. The above mentioned equations are a system of Hartree (Khartri) equations which was generalized for unsteady states. The present paper deals with the calculation of the potential of the longitudinal electric field of the ultrasonic waves by means of constants which characterize the plasma and the amplitudes of the ultrasonic waves. The calculations are discussed step by step. Especially, the case of a standing ultrasonic wave is discussed. The influence of

Card 2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

On Acoustic-electric Phenomena in a Degenerated Electron-ion Plasma

SOV/56-36-1-20/62

the ions each with another can be reduced to the shielding of the ion charge. Finally, the absorption coefficient α of sound in an electron-ion plasma is calculated. There are 8 references, 6 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute for the Physics of Metals of the Academy of Sciences, USSR)

SUBMITTED: June 7, 1958

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

S/139/60/000/03/005/045
E032/E314

AUTHORS: Zyryanov, P.S., Izyumova, T.G. and Skrotskiy, G.V.

TITLE: Effect of Electron Magnetic Resonance on the Optical Properties of Ferromagnetic and Paramagnetic Bodies 21

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, Nr 3, pp 32 - 38 (USSR)

ABSTRACT: Using a system of macroscopic equations, taking into account spin orbit interactions, a calculation is made of the refractive index of a gyrotropic medium under the conditions of magnetic resonance. An expression is obtained for the rotation of the plane of polarisation of a light wave as a function of amplitude and frequency of the rf field for transparent paramagnetic and ferromagnetic bodies. A study is made of the effect of ferromagnetic resonance on the optical Kerr effect and the results obtained are compared with experiment. The macroscopic equations are taken in the form given by Eqs (1)-(3), which must be supplemented by the equation of motion for the magnetisation M. In paramagnetic media, the latter is chosen in the Bloch form (Eq 4). For ferromagnetic materials the Landau Livshits form given

Card1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

S/139/60/000/03/005/045
E032/E314

Effect of Electron Magnetic Resonance on the Optical Properties of Ferromagnetic and Paramagnetic Bodies

by Eq (5) is employed. It was shown in a previous paper (Ref 3) that Eqs (1)-(3) together with Eq (4) or Eq (5) take into account spin orbit interactions. In fact, the self-consistent field H_i is due to spin-spin and spin-orbit interactions. Eq (1) does not include the damping term but this has no fundamental effect on the final results. The change in the optical properties of solids in magnetic resonance, and in particular the resonance Faraday effect, may in the case of paramagnetic media be used to determine the longitudinal and transverse relaxation times $\tau_{\parallel}$ and $\tau_{\perp}$. It is shown that the relative change in the rotation of the plane of polarisation is given by Eq (25), while the width of the absorption line can be determined from Eq (26). Eq (25) is the same as the expression obtained by Daniels and Wesemeyer (Ref 6) by another method. Using experimental values for $\Delta\theta/\theta$ at resonance $(\Delta\omega = 0)$ and H_o, one can calculate $\tau_{\parallel}$ and $\tau_{\perp}$ (H_c is the constant magnetic

Card2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

S/139/60/000/03/005/045
E032/E314

Effect of Electron Magnetic Resonance on the Optical Properties of Ferromagnetic and Paramagnetic Bodies

field). The effect of paramagnetic and ferromagnetic resonance on the optical Faraday effect can be used in fast modulation of beams of light by varying the amplitude of the rf field.

There are 2 figures and 11 references, of which 1 is French, 1 German, 5 English and 4 Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: March 16, 1959

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Mechanisms of the self-duplication of elementary cell structures. Pt.3: Nature of the reaction forces between chromosomes. TSitologiia 2 no.1:62-67 Ja-F '60. (MIRA 13:5)

1. Ural'skiy politekhnicheskiy institut, Sverdlovsk.
(CHROMOSOMES)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

81653
S/181/60/002/06/43/050
B006/B056

24.2120

AUTHORS: Zyryanov, P. S., Skrotskaya, Ye. G.

21

TITLE: The Interaction of Acoustic Oscillations in Ion- and Electron-ion Plasmas

21

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1316 - 1320

TEXT: It was the aim of the present paper to investigate the part played by the nonlinear effects in ion- and electron-ion plasmas in the case of acoustic oscillations. The authors calculate the mean free path of Debye phonons, and they estimate the phononic thermal conductivity and the relaxation time in a phonon system. By means of the plasma model of the metal V. P. Silin, Zyryanov, and G. G. Taluts have already investigated the velocity of sound, electric conductivity, Debye temperature, sound absorption, and other effects; the results obtained showed satisfactory agreement with experiments. The advantage offered by the plasma model is above all in the mathematical apparatus available for this model (method of collective excitations). The free path calculated here within the framework of the plasma model is used for the purpose of estimating

X

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

81653

The Interaction of Acoustic Oscillations in Ion- and Electron-ion Plasmas

S/181/60/002/06/43/050
B006/B056

phononic thermal conductivity, which must be known in order to be able to establish the validity of Bloch's assumption concerning the equilibrium distribution of phonons when solving the equation of motion in the conductivity problem. The effect produced by screening the electric field of ions is treated as a result of the zero plasma oscillations of the electron gas (which are analogous to the optical oscillations in ion crystals). The screening constant k_o of the Coulomb field is at first estimated, and an approximate expression for the velocity of sound in ion crystals is found. Formula (3) gives the Hamiltonian $\hat{H}$ of the system of interacting ions; in the latter the chaotic ion motion and its influence upon collective vibrations may be neglected. The operators for the production and annihilation of phonons (4) are defined and introduced into $\hat{H}$. The non-equilibrium distribution function $N_{\vec{k}}$ ($\vec{k}$ - wave number) of the phonons during the occurrence of a temperature gradient in the x-direction is investigated for the case of a slight deviation from equilibrium. For the mean path length of the phonons one obtains $l_{ph} \sim 2\frac{e^2}{k_o^3}\frac{n_o}{\kappa T}$; $n_o e^2/k_o^2$

Card 2/3

X

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

The Interaction of Acoustic Oscillations in Ion- and Electron-ion Plasmas

81653

S/181/60/002/06/43/050
B006/B056

is the electron-phonon interaction constant (cf. V. L. Bonch-Bruyevich, Ref. 8), $1/k_o$ is the screening radius (of the order of the mean distance between the ions). For metals one obtains: $l_{ph} \sim (10^{-4}/T)$ cm; the phononic thermal conductivity is found to amount to $\chi_{ph} \sim (10^8/T)$ erg.deg^{-1}cm^{-1}sec^{-1}. V. M. Yeleonskiy, D. N. Zubarev, and V. L. Bonch-Bruyevich are mentioned. There are 8 references: 6 Soviet and 2 American.

ASSOCIATION: Ural'skiy politekhnicheskiy institut Sverdlovsk (Ural Polytechnic Institute, Sverdlovsk)

SUBMITTED: September 16, 1959

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Nature of the forces of chromosonal interaction. Biofizika 6 no.4:495-498 '61. (MIRA 14:7)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova, Sverdlovsk. (CHROMOSOMES)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24483

S/126/61/011/006/009/011
E032/E314

3,2600

AUTHORS: Yeleonskiy, V.M., Zyryanov, P.S. and Silin, V.P.

TITLE: The Collision Integral for Charged Particles in a Magnetic Field

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11, No. 6, pp. 955 - 957

TEXT: The present note is concerned with the derivation of the collision integral for charged non-relativistic particles in a magnetic field. Results are given for the scattering of charged particles by each other and for the scattering of electrons by fixed impurities. The matrix element for the scattering of particles λ and β by each other is

$$\int (dq) 4\pi e_\lambda e_\beta \frac{\langle \lambda' | e^{iqr} | \lambda \rangle \langle \gamma' | e^{-iqr} | \gamma \rangle}{q|q| \varepsilon_{ij} \left[(E'_\lambda - E_\lambda)/\hbar, q \right]}, \qquad (1)$$

Card 1/7

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24483

where $|\lambda\rangle$, $|\lambda'\rangle$ are the states of the particle λ before and after scattering. The wave function representing a charged particle in the magnetic field is then taken in the form (Landau representation)

$$|\lambda\rangle \equiv |k_x^\lambda, k_z^\lambda, n_\lambda\rangle = (4\pi^2 a_\lambda)^{-1} \exp\{ik_x^\lambda x + ik_z^\lambda z\} \times \times \Phi_n[(y + a_\lambda^2 k_x^\lambda)/a_\lambda], \quad (2)$$

where $a_\lambda^2 = ch(|e_\lambda| B)^{-1}$ and $\Phi_n(x)$ is the normalised oscillator wave function. Eqs. (1) and (2) can then be used to show that the collision integral is

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

The Collision Integral ....

$$I(f_\lambda) = \sum_{\beta, n'_\beta, n_\beta, n'_\lambda} (2\pi)^{-6} \int dk_x'^{\lambda}\, dk_x'^{\beta}\, dk_x^{\beta}\, dk_z'^{\lambda}\, dk_z'^{\beta}\, dk_z^{\beta}\, \delta\left[\hbar\omega_\beta + \hbar\omega_x\right] \times$$

$$\times \delta\left[\Delta k_z^\lambda + \Delta k_z^\beta\right] \delta\left[\Delta k_x^\lambda + \Delta k_x^\beta\right] \frac{2\pi}{\hbar}$$

$$\left| \int \frac{4\pi e_\lambda e_\beta\, dq F_{n'_\lambda n_\lambda}\left[q, \Delta k_x^\lambda, k_x'^{\lambda}\right] F_{n'_\beta n_\beta}\left[-q, \Delta k_x^\beta, k_x'^{\beta}\right]}{\left[q^2 + (\Delta k_x^\lambda)^2 + (\Delta k_z^\lambda)^2\right] \varepsilon\left[\omega_\lambda, \Delta k_z^\lambda, q^2 + (\Delta k_x^\lambda)^2\right]} \right|^2 \times \qquad (3)$$

$$(f(\lambda') f(\beta') - f(\lambda) f(\beta)),$$

where

Card 3/7

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

$$\hbar\omega_\lambda = E'_\lambda - E_\lambda, \; E_\lambda = (\hbar k_z^\lambda)^2/2\mu_\lambda + \frac{|e_\lambda| B}{\mu_\lambda c}(n_\lambda + 1/2), \; \Delta k = k' - k,$$

$$F_{n'n}[q, \Delta k_x, k'_x] = (n'! n!)^{-1/2}\left(\left[\Delta k_x^2 + q^2\right]^{1/2} a/\sqrt{2}\right)^{n'-n} \times$$

$$\times \exp\left\{-\left[\Delta k_x^2 + q^2\right] a^2/4\right\} L_n^{n'-n}\left(\left[\Delta k_x^2 + q^2\right] a^2/2\right) \times$$

$$\times \exp\left\{-i a^2 q k'_x + i a^2 \Delta k_x q/2 + i(n - n')\left[\arcsin \Delta k_x \left[\Delta k_x^2 + q^2\right]^{-1/2} - \pi/2\right]\right\},$$

$$L_n^{n'-n}(x) = x^{n-n'} e^x \frac{d^n}{dx^n}\left(x^{n'} e^{-x}\right).$$

In Eq. (3) $\varepsilon(\omega, q_z, q_\perp)$ is defined by $q_i q_j \varepsilon_{ij}(\omega, q) = (q_\perp^2 + q_z^2)\varepsilon(\omega, q_z, q_\perp)$. According to Zyryanov, P.S. (Ref. 3: ZhETF) for spatial uniform distributions of particles of type β

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24483

The Collision Integral ....

S/126/61/011/006/009/011
E032/E314

$$\varepsilon(\omega,\ q_z q_\perp) = 1 - \frac{4\pi}{q_z^2 + q_\perp^2} \lim_{\gamma \to 0} \sum_{\beta,\, n_\beta,\, n'_\beta} \frac{g_\beta e_\beta^2}{(2\pi a_\beta)^2} \left| F_{n'_\beta,\, n_\beta}(a_\beta^2 q_\perp^2/2) \right|^2 \times$$

$$\times \int dk_z \frac{f(\beta') - f(\beta)}{E'_\beta - E_\beta + \hbar\omega - i\hbar\gamma},$$

where $f(\beta)$ is the distribution function,

$g_\beta = 2s_\beta + 1$ and

s_β is the spin of the particles of type β.

In the case of scattering of electrons by fixed charged impurities of a given type, which are uniformly distributed in space with a density n_o, the collision integral becomes

Card 5/7

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

$$I(f_\gamma) = \sum_{n'} (2\pi)^{-2} \int dk_x' \, dk_z' \, dq \frac{2\pi}{h} \delta(E_\gamma' - E_\gamma) \times$$
$$\times (4\pi eQ)^2 n_0 \left| F_{nn'}\left(\left[\Delta k_x^2 + q^2\right] a^2/2\right)\right|^2 \left[q^2 + \Delta k_x^2 + \right.$$
$$\left. + \Delta k_z^2\right]^2 \varepsilon^2 \left[0, \Delta k_z, \Delta k_x^2 + q^2\right] \left\{f(\gamma') - f(\gamma)\right\}, \qquad (4)$$

where Q is the charge of the impurity. Since the energy of the electron is conserved when it is cattered by the impurity, one can put $\omega = 0$ in $\varepsilon(\omega, q)$. In the quasi-classical approximation the asymptotic form of the function $|F_{n,n'}(x)|^2$ for large n is

$$|F_{n,n'}(x)|^2 = J^2_{n'-n}\left[(2x(n' + n + 1))^{1/2}\right] \qquad (5)$$

where $J^2_{n'-n}(x)$ is the square of the Bessel function of

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24483
S/126/61/011/006/009/011
E032/E314

The Collision Integral ....

order n' - n . Detailed analysis of Eqs. (3) and (4) will be given in another paper. Other information related to the present topic is given by V.P. Silin (Ref. 1: ZhETF, Ref. 2: FMM) and Zyryanov, P.S. (Ref. 3). The results reported in the present note were obtained while the present authors attended the Theoretical Physics Winter School at Kourovka. S.V. Vonsovskiy is thanked for inviting the authors to that school. There are 3 Soviet references.

ASSOCIATIONS: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute) Fizicheskiy institut im. P.N. Lebedeva (Physics Institute im. P.N. Lebedev)

SUBMITTED: February 4, 1961

Card 7/7

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24708
S/056/61/040/005/008/019
B111/B205

24.6714

AUTHOR: Zyryanov, P. S.

TITLE: Quantum theory of acoustic oscillations of an electron-ion plasma in a magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 5, 1961, 1353-1359

TEXT: It is shown that in a strong magnetic field, longitudinal ultrasonic oscillations with a wave vector perpendicular to the field degenerate into ion oscillations, since the screening radius becomes infinite in this case. The purpose of this study was to establish a theory of low-frequency oscillations of an electron-ion plasma, taking into account the quantization of energy of the orbital motion of charged particles in the magnetic field, and to clarify the dependence of the attenuation coefficient of ultrasonic waves on the magnetic field strength. The condition for the existence of acoustic excitations has been studied on the basis of the quantum dispersion relation for electron-ion plasma

Card 1/5

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

oscillations. The effect of the magnetic field on the attenuation constant is described in papers by V. P. Silin (ZhETF, 23, 649, 1952; 38 977, 1960) and C. Kittel (Acta Met., 3, 295, 1955). Now, an attempt has been made to study the effect of the magnetic field on the absorption coefficient of ultrasonic waves whithin the framework of the plasma theory of metals. The dispersion relation has the form

$$1 = \lim_{\gamma \to 0} \frac{G(q)}{2\pi^2\hbar^2\alpha^2} \sum_{nn'} F^2_{nn'}(q_x) \left\{ \int dk_z \frac{f_{01}(E^{(1)}_{k_z+q_z,n'}) - f_{01}(E^{(1)}_{k_z,n})}{E^{(1)}_{k_z+q_z,n'} - E^{(1)}_{k_z,n} - \hbar\omega + i\hbar\gamma} + \right.$$

$$\left. + \frac{z^2}{2} \int dk_z \frac{f_{02}(E^{(2)}_{k_z+q_z,n'}) - f_{02}(E^{(2)}_{k_z,n})}{E^{(2)}_{n_z+q_z,n'} - E^{(2)}_{k_z,n} - \hbar\omega + i\hbar\gamma} \right\}, \qquad (1)$$

where

$$G(q) = 4\pi e^2/q^2, \qquad \alpha^2 = c\hbar/eH, \qquad \omega_{jc} = e_j H/m_j c,$$

$$E^{(j)}_{k_z,n} = \hbar^2 k_z^2/2m_j + \hbar\omega_{jc}(n + 1/2)$$

$$F_{nn'}(q_x) = (n!/n'!)^{1/2} \exp(-\alpha^2 q_x^2/4)(-\alpha q_x/\sqrt{2})^{n'-n} L_n^{n'-n}(\alpha^2 q_x^2/2),$$

$$L_n^{n'-n}(x) = (1/n!)\, e^{-x} x^{n'-n} \frac{d^n}{dx^n}(e^x x^{n'}), \qquad n' > n,$$

Card 2/5

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24708

S/056/61/040/005/008/019
B111/B205

Quantum theory of acoustic...

where $e_1 = -e$, $e_2 = Ze$; subscripts 1 and 2 refer to electrons and ions, respectively; f_{o1} is the degenerate Fermi function, and f_{o2} is the Maxwellian ion distribution function. For the existence of acoustic oscillations it is necessary to look for a solution to ε, which exhibits the following asymptotic behavior: $\lim_{q \to 0} \varepsilon' \sim \mathrm{const}/q^2$, where $\varepsilon' = 1 + k_o^2 (q_x, \omega, q_z)/ ^2$; $\varepsilon = \varepsilon' + i\varepsilon''$. In the absence of a magnetic field, the plasma is isotropic, and otherwise it is anisotropic. k_o is a function of the angle, ϑ, between $\vec{q}$ and $\vec{H}$, and also of the frequency ω. As far as the velocity of sound is determined by k_o, it is seen from $\omega^2 = \omega^2_{o2} q^2 / [q^2 + k_o^2(q_x, \omega, q_z)]$ (5) that the magnetic field causes a dispersion of the acoustic oscillations in space and time and renders the velocity of sound anisotropic. The author examined the dependence of k_o on the parameters of the system for various limiting cases where the

Card 3/5

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

general formula for k_0 is too complex for investigations. It is shown that the screening radius, which is constant along the field, will become infinite with $\varphi = \pi/2$ and strong magnetic fields. For $\omega \gg \gamma$ the attenuation frequency is given by

$$\gamma = \frac{m_1 \omega^2 G(q)}{4\pi\hbar^2 \varkappa \omega_{02}^3} \sum_{nn'} F_{nn'}^2(q_1) \int d\zeta f_{01}(E_{\zeta,n}) \times \times \{\delta(E_{\zeta-q_2,n'} - E_{\zeta,n} + \Omega) - \delta(E_{\zeta+q_2,n'} - E_{\zeta,n} - \Omega)\}. \quad (15)$$

If the dispersion of the velocity of sound is ignored, then $\gamma_0 = \frac{\pi}{12} \frac{m_1}{m_2} v_0 q$. It may be seen that for longitudinal ultrasonic waves, γ does not depend on the magnetic field when $\vec{q} \parallel \vec{H}$.

$$\frac{\gamma_\perp}{\gamma_0} = 2r_c q \int_0^{\pi/2} J_{11}^2(r_c q \sin\varphi) \sin\varphi \, d\varphi, \quad (20)$$

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

24708

S/056/61/040/005/008/019
B111/B205

Quantum theory of acoustic...

is given for $\frac{\gamma_1}{\gamma_0}$ (γ_1 is the value of γ for $\vartheta = \pi/2$). K. N. Stepanov, V. A. Yakovlev, A. V. Kalyush and L. D. Landau are mentioned. There are 2 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: November 15, 1960

Card 5/5

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

35580
S/056/62/042/003/041/049
B108/B102

24.6712

AUTHORS: Yeleonskiy, V. M., Zyryanov, P. S., Silin, V. P.

TITLE: Collision integral for charged particles in a magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 896-904

TEXT: The collision integral for charged particles in a strong magnetic field $\vec{B}$ is derived. The particles are assumed to undergo Coulomb interaction. Polarization of the medium and quantum effects are taken into account. For non-uniform particle distribution in the y direction, the collision integral for two sorts of particles, α and β, has the general form

$$I\,[f_\alpha(n_\alpha, p_z^\alpha, y_0^\alpha)] = \sum_{\beta n'_\alpha n_\beta n'_\beta} (2\pi\hbar)^{-3} \int dp_z'^\alpha dp_z'^\beta dp_z^\beta \hbar\delta(p_z^\alpha + p_z^\beta - p_z'^\alpha - p_z'^\beta) \times$$

$$\times (2\pi\hbar)^{-3} \int dp_x'^\alpha dp_x'^\beta dp_x^\beta \hbar\delta(p_x^\alpha + p_x^\beta - p_x'^\alpha - p_x'^\beta)\,\delta\,[E_\alpha(\nu'_\alpha) + E_\beta(\nu'_\beta) -$$

$$- E_\alpha(\nu_\alpha) - E_\beta(\nu_\beta)]\,\frac{2\pi}{\hbar} \left| \int dk_y dk'_y 4\pi e_\alpha e_\beta A_0^{-1} \left(\frac{E_\alpha(\nu'_\alpha) - E_\alpha(\nu_\alpha)}{\hbar}, \frac{p_x'^\alpha - p_x^\alpha}{\hbar}, \right.\right.$$

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

S/056/62/042/003/041/049
B108/B102

Collision integral for charged ...

$$\frac{p_z'^{\alpha}-p_z^{\alpha}}{\hbar};\ k_y,\ k_y'\Big)\exp\Big\{+\frac{i}{2}k_y(y_0^{\alpha}+y_0^{\alpha'})-\frac{i}{2}k_y'(y_0^{\beta}+y_0'^{\beta})-$$

$$-\frac{1}{2}|X_\alpha|^2-\frac{1}{2}|X_\beta'|^2\Big\}\frac{\bar{n}_\alpha!}{\sqrt{n_\alpha'!n_\alpha!}}L_{\bar{n}_\alpha}^{|n_\alpha'-n_\alpha|}(|X_\alpha|^2)\frac{\bar{n}_\beta!}{\sqrt{n_\beta'!n_\beta!}}L_{\bar{n}_\beta}^{|n_\beta'-n_\beta|}(|X_\beta'|^2)\times \quad (11).$$

$$\times X_\alpha^{|n_\alpha'-n_\alpha|}X_\beta'^{|n_\beta'-n_\beta|}\Big|^2\{f_\alpha(n_\alpha',p_z'^{\alpha},y_0'^{\alpha})f_\beta(n_\beta',p_z'^{\beta},y_0'^{\beta})-$$

$$-f_\alpha(n_\alpha,p_z^{\alpha},y_0^{\alpha})f_\beta(n_\beta,p_z^{\beta},y_0^{\beta})\}.$$

$$X_\beta'=\sqrt{\frac{c\hbar}{2|e_\beta'|B}}\Big[\frac{|e_\beta|B}{c\hbar}(y_0^{\beta}-y_0'^{\beta})\,\mathrm{sign}\,(n_\beta'-n_\beta)-ik_y'\Big].$$

The L's are Laguerre polynomials. The term A^{-1} implies the tensor of complex dielectric constant involving both frequency and spatial dispersion. Consequently, this collision integral accounts also for screening owing to polarization of the medium. From the above collision integral another is derived for a distribution function depending on the

Card 2/3

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

Collision integral for charged ... S/056/62/042/003/041/049
B108/B102

longitudinal and transverse momenta as well as on the y components of the Larmor radii. There are 8 references: 6 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: N. Rostoker. Phys. of Fluids, 3, 922, 1960; Higher Transcendental Functions, 2, N.-Y., 1953, p. 199.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Physics of Metals of the Academy of Sciences USSR)

SUBMITTED: October 30, 1961

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Heat conductivity of Fermi gas in a quantized magnetic field.
Fiz. met. i metalloved. 18 no.2:161-165 Ag '64. (MIRA 18:8)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; KALASHNIKOV, V.P.

Quantum theory of thermomagnetic phenomena in metals and semiconductors. Fiz. met. i metalloved. 18 no.2:166-170 Ag '64.
(MIRA 18:8)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 2294-66 EWT(1) IJP(c)
ACCESSION NR: AP5014575 UR/0181/65/007/006/1749/1755

44,55

AUTHOR: Zyryanov, P. S.; Okulov, V. I. 44,55

TITLE: Theory of nondissipative electron currents in a quantizing magnetic field

21,44,55

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1749-1755

TOPIC TAGS: conduction current, heat conduction, thermal conduction, quantum theory, galvanomagnetic effect, temperature dependence

ABSTRACT: The authors calculate the nondissipative volume densities of the heat flux and of the conduction current in a system of carriers with arbitrary law of dispersion, in the presence of a strong quantizing magnetic field. These fluxes are necessary for the construction of a quantum theory of thermo-galvanomagnetic phenomena in metals and semiconductors. The calculations are based on general formulas for the kinetic coefficients, given in the work of Kubo et al. (J. Phys. Soc. Japan v. 12, 1203, 1957 and others). General

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 2294-66
ACCESSION NR: AP5014575

3

expressions are first derived for the total current and for the total heat flux, and the method of separating the nondissipative components is then developed. It is shown that when the nondissipative heat-flux and conduction-current densities are expressed in terms of thermodynamic functions then have the same form, for any arbitrary dispersion law that leads to closed cyclotron orbits of the carriers. Orig. art. has: 35 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of Metal Physics AN SSSR)

44,55

SUBMITTED: 28Dec64 ENCL: 00 SUB CODE: EM

NR REF SOV: 006 OTHER: 005

Card 2/2 DP

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 22907-66 EWT(1) IJP(c) GG
ACC NR: AP6006876 SOURCE CODE: UR/0181/66/008/002/0623/0626

65
B

AUTHOR: Zyryanov, P. S.; Silin, V. P.

ORG: Institute of Physics of Metals, AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

TITLE: Concerning the article by Yu. N. Obraztsov "Thermoelectric power of semiconductors in a quantizing magnetic field"

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 623-626

TOPIC TAGS: thermoelectric power, semiconductor conductivity, quantum theory, transport phenomenon, charged particle, magnetic field

ABSTRACT: The article in question was published in FTT v. 7, 573, 1965. It contained remarks concerning work by the authors of the present article dealing with certain paradoxes of quantum theory of transport phenomena. The paradox consists in the fact that the differential thermoelectric power increases without limit with increasing temperature, and Einstein's relations for the coefficients in the volume density of a flux of charges are seemingly violated. The authors reject Obraztsov's claim that some of the deductions follow from his earlier work and claim that their method is simpler than that of Obraztsov. Orig. art. has: 3 formulas.

SUB CODE: 20/ SUBM DATE: 04Oct65/ ORIG REF: 010/ OTH REF: 004

2

Card 1/1 BLG

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; TAIUTS, G.G.

Theory of the absorption of sound in solids. Zhur.eksp. i teor.fiz. 49 no.6:1942-1949 D '65.

(MIRA 19:1)

1. Institut fiziki metallov AN SSSR. Submitted July 23, 1965.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; OKULOV, V.I.

Theory of nondissipative electron streams in a quantized magnetic field. Fiz. tver. tela 7 no.6:1749-1755 Je '65.

(MIRA 18:6)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

YELEONSKIY, V.M.; ZYRYANOV, P.S.; SKROTSKIY, G.V.; SOLOV'YEV, G.V.

Theory of the complex electric permeability of weak electrolytes. Zhur. fiz. khim. 36 no.3:625-628 Mr '62. (MIRA 17:8)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Theory of transport phenomena in electron-phonon systems in a magnetic field. Zhur. eksp. i teor. fiz. 47 no.4:1378-1385 0 '64. (MIRA 18:1)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; SILIN, V.P.

Quantum theory of thermomagnetic phenomena in semiconductors and metals. Fiz. met. i metalloved. 17 no.6:934-935 Je '64. (MIRA 17:8)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZVEZDIN, A.K.; ZYRYANOV, P.S.

Oscillations of the relaxation time in nuclear spin and the Knight shift in metals and semiconductors. Fiz.met. i metalloved. 18 no.4:487-491 O '64. (MIRA 18:4)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; SILIN, V.P.

Quantum theory of transfer phenomena in a high magnetic field. Zhur. eksp. i teor. fiz. 46 no.2:537-543 F '64. (MIRA 17:9)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

BORISOV, B.S.; VOLKENSHTEYN, N.V.; ZYRYANOV, P.S.; TALUTS, G.G.

Volt-ampere characteristics of bismuth at low temperatures in a magnetic field. Fiz. met. i metalloved. 16 no.4:624-626 O '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; SILIN, V.P.

Quantum theory of the transfer phenomenon in an electron gas in a magnetic field. Fiz. met. i metalloved. 16 no.5:798-799 N '63. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR i Fizicheskiy institut im. P. N.Lebedeva AN SSSR.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Effect of phonon drag on the longitudinal thermo-e.m.f. in semiconductors and semimetals in a longitudinal magnetic field. Fiz. tver tela 5 no.9:2576-2579 S '63. (MIRA 16:10)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Quantum Theory of weakly non-equilibrium electron-phonon systems in a magnetic field. Fiz. tver. tela 5 no.10:3011-3017 O '63. (MIRA 16:11)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Theory of transfer phenomena in electron-phonon systems in magnetic fields considering the entrainment of phonons. Fiz. met. i metalloved. 16 no.1:13-18 Jl '63. (MIRA 16:9)

1. Institut fiziki metallov AN SSSR.
(Electrons) (Collisions (Nuclear physics))

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; TALUTS, G.G.

Theory of strengthening ultrasonic waves. Fiz. met. i metalloved. 14 no.2:287-288 Ag '62. (MIRA 15:12)

1. Institut fiziki metallov AN SSSR.
(Ultrasonic waves)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; TALUTS, G.G.

Nonequilibrium electron and phonon systems in an external magnetic field. Zhur.eksp.i teor.fiz. 43 no.6:2136-2142 D '62.
(MIRA 16:1)

1. Institut fiziki metallov AN SSSR.
(Plasma (Ionized gases)) (Electrons)
(Magnetic fields)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

S/056/62/043/006/028/067
B112/B186

AUTHORS: Zyryanov, P. S., Taluts, G. G.

TITLE: Non-equilibrium electron and phonon systems in an external magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2136 - 2142

TEXT: For electrons interacting with a quantized Bose field in the presence of an external homogeneous magnetic field, the following kinetic equations are derived:

$$\frac{\partial f(\nu)}{\partial t} = \sum_{\nu',q} \frac{2\pi}{\hbar} |C_q|^2 \{ |\langle \nu' | e^{iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu - \hbar\omega_q) \times [f(\nu')(1-f(\nu))(N_q+1) - f(\nu)(1-f(\nu'))N_q] + |\langle \nu' | e^{-iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu + \hbar\omega_q) \times [f(\nu')(1-f(\nu))N_q - f(\nu)(1-f(\nu'))(N_q+1)]\}, \quad (4)$$

$$\frac{\partial N_q}{\partial t} = \sum_{\nu\nu'} \frac{4\pi}{\hbar} |C_q|^2 \{ |\langle \nu' | e^{iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu - \hbar\omega_q) \times [(f(\nu') - f(\nu))N_q + f(\nu')(1-f(\nu))]\}. \quad (5)$$

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

Non-equilibrium electron ... S/056/62/043/006/028/067
B112/B186

Here, N_q denotes the phonon distribution function, and C_q the electron-phonon interaction constant. Closed formulae are derived for the kinetic coefficients $D_{\alpha\beta}$ and A_α (Fokker-Planck coefficients) entering the kinetic equation $\partial f/\partial t = \partial(D_{\alpha\beta}\partial f/\partial p_\beta)/\partial p_\alpha + \partial(A_\alpha f)/\partial p_\alpha$ which is obtained from Eq. (4) for $\hbar = 0$.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences USSR)

SUBMITTED: June 3, 1962

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.

Absorption of ultrasonic waves in crossed static electric and magnetic fields. Fiz. met. i metalloved. 13 no.5:641-645 My '62. (MIRA 15:6)

1. Institut fiziki metallov AN SSSR.
(Ultrasonic waves)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

YELEONSKIY, V.M.; ZYRYANOV, P.S.; SILIN, V.P.

Collision integral for charged particles in a magnetic field.
Zhur.eksp.i teor.fiz. 42 no.3:896-904 Mr '62. (MIRA 15:4)

1. Institut fiziki metallov AN SSSR.
(Collisions (Nuclear physics)) (Magnetic fields)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

39969

S/126/62/013/005/001/031
E032/E414

AUTHOR: Zyryanov, P.S.

TITLE: On the absorption of ultrasound in crossed electrostatic and magnetostatic fields

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.5, 1962, 641-645

TEXT: The quantum theory of longitudinal dielectric constant and the dielectric-constant tensor for plasma in an external magnetostatic field which was described in previous papers (ZhETF, v.40, 1961, 1065; ZhETF, v.40, 1961, 1353; ZhETF, v.41, 1961, 1119) is now generalized to the case of perpendicular electrostatic and magnetostatic fields. It is assumed that the ultrasonic frequency and the electron cyclotron frequency are much greater than the relaxation frequency. The calculations of the first of the above papers are repeated for arbitrary static fields and several kinds of particles. It is shown that the absorption coefficient for longitudinal ultrasonic waves propagated at right angles to the magnetic and electric

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

On the absorption of ... S/126/62/013/005/001/031
E032/E414

fields exhibits oscillations which are of the form

$$\Gamma/\Gamma_0 = \frac{\omega^*}{\omega}\left\{1 + A\sin\left(\pi\frac{\omega^*}{\Omega}\right) + B\cos\left(\pi\frac{\omega^*}{\Omega}\right)\right\} \quad (17)$$

It is pointed out that these oscillations would be very difficult to observe experimentally (the drift velocity must be comparable with the velocity of sound and the above stringent frequency limitations must be satisfied).

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: November 10, 1961

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, P.S.; KALASHNIKOV, V.P.

Quantum theory of the dielectric permeability tensor for an electron plasma in a magnetic field. Zhur.eksp.i teor.fiz. 41 no.4:1119-1124 O '61. (MIRA 14:10)

1. Ural'skiy politekhnicheskiy institut.
(Quantum theory) (Plasma (Ionized gases)--Electric properties)
(Magnetic field)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

TASHKINOV, A. (Perm'); KNYAZEV, V.; SYCHEV, B., shofer; TELITSYN, A., shofer; SHIRMANOV, Yu., shofer; GORSHKOV, G., shofer; FEDOTOV, G. (Penza); RYBIN, N. (Krasnodarskiy kray); ZYRYANOV, T., bukhgalter pozharnoy chasti (Kamensk-Ural'skiy, Sverdlovskaya obl.); KRIVOSHAPOV, I. (Sverdlovsk); VOLODIN, V. (Rostov-na-Donu)

Readers' letters. Pozh.delo 8 no.8:30 Ag '62. (MIRA 15:8)

1. Nachal'nik dobrovol'noy pozharnoy druzhiny kolkhoza "Rossiya", Kalininskaya obl. (for Knyazev). 2. Bol'shaya-Murashkinskaya rayonnaya pozharnaya komanda Gor'kovskoy oblasti (for Sychev, Telitsyn, Shirmanov, Gorshkov).

(Fire prevention)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, S.N.

Recovery of bismuth as a byproduct from complex ore concentration products. TSvet. met. 37 no.12:25-8 D '64 (MIRA 18:2)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, T.P.; TURGAMBAYEV, B.M.; KARABACH, T.L.; YURKOV, V.N.

Practice of using the system of complete shrinkage stopping with breaking by means of deep holes at the Maslyanskiy Mine. Trudy Alt. GMNII AN Kazakh. SSR 10:64-69 '61. (MIRA 14:9)
(Altai Mountains--Stoping (Mining)) (Boring) (Blasting)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, V., kand. tekhn. nauk; LIZAREV, A., kand. tekhn. nauk; SPEKTOR, M., kand. tekhn. nauk

Variants of units for shoring panels of apartment houses in series 1-468. Zhil. stroi. no.1:26-28 '64. (MIRA 18:11)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 3403-66 EWT(1)/EWT(m)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c)
JD/JG/GG

UR/0020/65/164/003/0545/0548

ACCESSION NR: AP5024210

AUTHORS: Mazalov, L. N.; Vaynshteyn, E. Ye.; Zyryanov, V. G.

TITLE: On the relation of zone and discrete absorption in x ray spectra of atoms in polar crystals

SOURCE: AN SSSR. Doklady, v. 164, no. 3, 1965, 545-548

TOPIC TAGS: x ray spectroscopy, polar crystal, alkali halide, conduction band electron, lithium compound, silver compound, sodium compound, potassium compound, rubidium compound

ABSTRACT: X-ray spectra for LiCl, AgCl, NaCl, KCl, and RbCl were determined. The investigation was initiated to clarify the relation between the zone and exciton absorption spectra of atoms in polar crystals. The experimental conditions were identical to those described by E. Ye. Vaynshteyn, L. N. Mazalov, and V. G. Zyryanov (Fiz. tverd. tela, 7, v. 5, 1965). The experimental results are presented graphically (see Fig. 1 on the Enclosure). By combining their experimental results with literature data on the photoelectric effect, ultraviolet spectra, F centers, x-ray, K and L spectra, the authors come to the conclusion that in all x-ray component spectra of the polar crystals investigated there exists a relatively wide region (of the order of several electron volts) situated below the

Card 1/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 3403-66

ACCESSION NR: AP5024210 6

conduction band which originates from the transition of photoelectrons to exciton levels. The comparisons are presented graphically. The authors further suggest that the two sharp maxima in the $L_{II,\ III}$ chlorine absorption spectra in KCl and NaCl crystals reported by A. P. Lukirskiy and T. I. Zimkina (Izv. AN SSSR, ser. fiz., 28, 763, 1964) are also of exciton origin. Orig. art. has: 4 graphs.

ASSOCIATION: 44,55 Institut neorganicheskoy khimii, Sibirskogo otdeleniya Akademii nauk SSSR (Institute for Inorganic Chemistry, Siberian Section of the Academy of Sciences, SSSR); Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo (Institute for Geochemistry and Analytical Chemistry) 44,55

SUBMITTED: 25Jan65 ENCL: 01 SUB CODE: SS

NO REF SOV: 006 OTHER: 011

Card 2/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

L 3403-66
ACCESSION NR: AP5024210

ENCLOSURE: 01

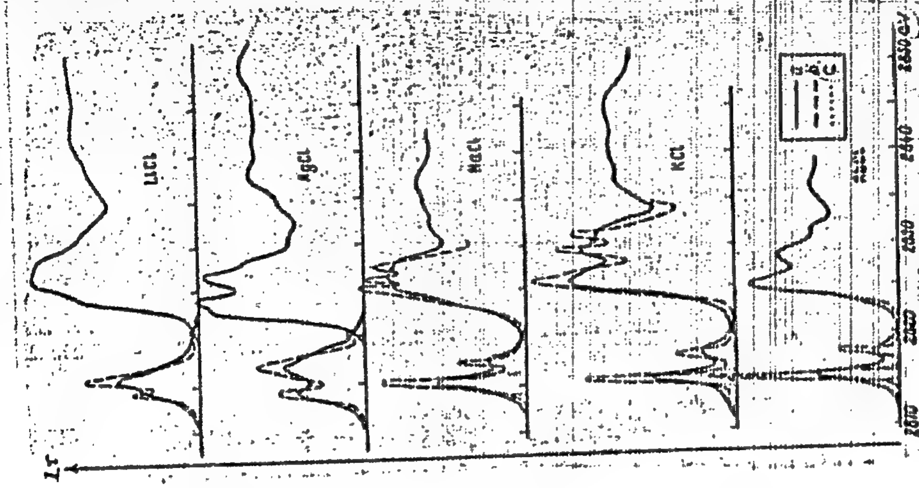

Fig. 1. $K\alpha_{1x}$ emission band and K chlorine absorption edge in LiCl, AgCl, NaCl, KCl, and RbCl. a— experimental curves; b— spectra corrected for experimental distortion and inner level width; c— extrapolation of corrected contour to zero intensity.

Card 3/3 *ned*

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

SHUVAYEV, A.T.; ZYRYANOV, V.G.; GORSKIY, V.V.

K-fluorescence spectrum of calcium in some compounds.
Izv. AN SSSR. Ser. fiz. 28 no. 5:823-824 My '64. (MIRA 17:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

PERCHUK, L.L.; ZYRYANOV, V.N.

Mineral facies of the alkalinity of astrophyllitic rocks. Dokl. AN SSSR 162 no.3:671-673 My '65. (MIRA 18:5)

1. Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii AN SSSR. Submitted January 22, 1965.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, V.N.

Petrochemical characteristics of Permian and Triassic volcanic formations in southwestern Dzungaria. Trudy Lab. paleovulk. Kazakh. gos. un. no.56:138-142 '63. (MIRA 16:6)

1. Geologicheskiy institut AN Kazakhskoy SSR.
(Dzungaria—Volcanoes)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, V. S.

Cand Tech Sci - (diss) "Study of the performance of the body of chimneys made of fire-resistant reinforced concrete." Moscow, 1961. 15 pp; (Academy of Construction and Architecture USSR, Central Scientific Research Inst of Construction Designs "TsN-IISK"); 200 copies; price not given; (KL, 10-61 sup, 215)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, G.

"Canadian region, a geography of Canada" by D.F.Putnam, ed. Reviewed by G.Zytianov. Geog.v shkole 19 no.6:75 N-D '56. (MLRA 10:1)
(Canada--Description and travel)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

3(5) SOV/10-59-3-26/32

AUTHORS: Zyryanov, G.A. and Lavrushina, N.B.

TITLE: A New Canadian Atlas

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959, Nr 3, pp 139-141 (USSR)

ABSTRACT: This is a review of the "British Columbia Atlas of Resources", Vancouver, B.C., 1956.

ASSOCIATION: Sovet po izucheniyu proizvoditel'nykh sil AN SSSR (Council for Research on Production Forces, Attached to the AS USSR). Moskovskiy gos. universitet im. M.V. Lomonosova, Geograficheskiy fakul'tet (Moscow State University imeni M.V. Lomonosov, Department of Geography).

Card 1/1

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, G.A.

Gas gangrene infection following appendectomy. Khirurgiia no.7: 85 Jl '55. (MLRA 8:12)
(APPENDICITIS) (INFECTION)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

S/0048/64/028/001/0182/0186

AP4010318

AUTHOR: Smolin, R.P.; Drokin, A.I.; Zy*ryanov, G.I.; Ry*kov, A.S.

TITLE: Temperature magnetic hysteresis of Mg-Mn ferrites /Report, Symposium on Questions of Ferro- and Antiferromagnetism held in Krasnoyarsk 25 June-7 July 1962/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.1, 1964, 182-186

TOPIC TAGS: temperature magnetic hysteresis, magnesium manganese ferrite, ferrite, demagnetizing field, coercive force, grain size, hysteresis loop

ABSTRACT: Although the potential scientific and practical value of investigating temperature hysteresis of the magnetization of ferrites has been pointed out by a number of authors, so far there have been few investigations of the effect. D.A. Laptey and A.I.Drokin (Izv.VUZ, Fizika, 4, 111, 1961) investigated temperature magnetic hysteresis of nickel-zinc and manganese-zinc ferrites, but there have been no studies of the dependence of the effect on the composition, crystal structure, and other properties of ferrites. Accordingly, the present study was devoted to investigation of temperature magnetic hysteresis in polycrystalline ferrites representing various points on the $MnO-MgO-Fe_2O_3$ concentration triangle. In all, about 70 dif-

Card 1/2

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

AP4010318

ferent compositions were investigated. All the specimens were prepared by the usual ceramic technique and were in the form of rods of rectangular cross section measuring $2.8 \times 2.7 \times 86$ mm^3. The measurements were carried out on a vertical astatic magnetometer. In most cases the temperature range extended from -183° to the Curie point. The results are presented in the form of curves of the specific magnetization (gauss cm^3 g^{-1}) (or magnetization I) versus temperature for the full heating-cooling cycle. The effect of different factors on the shape of the curves is discussed. The following conclusions are drawn on the basis of the experimental results: 1. The reason for temperature magnetic hysteresis in Mg-Mn ferrites is irreversible domain wall motion. 2. The hysteresis decreases with increasing MnO concentration. 3. Increase of the temperature and the duration of annealing leads to decrease of the temperature magnetic hysteresis. 4. The size of the crystal grains has a significant influence on the magnetic properties of Mg-Mn ferrites: increase in the grain size leads to reduction of the hysteresis and coercive force. 5. The internal demagnetizing field has a significant influence on magnetization switching in Mg-Mn ferrites. 6. Most of the other regularities observed as regards temperature magnetic hysteresis in Mg-Mn ferrites are similar to the regularities typical of polycrystalline metals such as nickel, permalloy and work hardened Elinvar. Orig.art.has: 4 figures.

Card 2/2 Inst. Physics, Siberian Dept, AS USSR

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

S/0048/64/028/001/0178/0181

AP4010317

AUTHOR: Smolin, R.P.; Drokin, A.I.; Zy*ryanov, G.I.

TITLE: Temperature magnetic hysteresis of polycrystalline monoferrites /Report, Symposium on Questions of Ferro- and Antiferromagnetism held in Krasnoyarsk, 25 June to 7 July 1962/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v.28, no.1, 1964, 178-181

TOPIC TAGS: temperature magnetic hysteresis, monoferrite, nickel ferrite, cobalt ferrite, barium ferrite, lithium ferrite, copper ferrite, manganese ferrite, magnesium ferrite

ABSTRACT: The properties and characteristics of monoferrites, characterized by the chemical formula $MeFe_2O_4$, where Me is a divalent metal ion, are of interest not only because they are employed as such in electronic engineering, but also because these materials are used in synthesis ofmixed ferrites for different special applications. The temperature dependence of their magnetic characteristics is of particular interest in view of the fact that ferrite components are frequently required to operate in a wide range of temperatures. The purpose of the present work was to

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

AP4010317

investigate temperature magnetic hysteresis of monoferrites of different composition. Specimens were prepared with 50 mole percent Fe_2O_3 and 50 mole percent MeO, where Me = Mn, Mg, Ni, Co, Ba, Cu or Li. The specimens were prepared by the usual ceramic technology in the form of 86 x 3 x 2 mm^3 rods. The values of the Curie points and coercive force in an 800 Oe field are listed in the table. Preliminary tests showed that the Zn, Cd and Ca ferrites were either nonferromagnetic or exhibited very weak magnetism so that their temperature magnetic hysteresis was not investigated. The magnetic moments of the specimens were measured on vertical astatic magnetometer and the results were converted to obtain the specific magnetization σ in gauss cm^3 g^{-1}. The results for nickel ferrite are shown in Fig.1 of the Enclosure. Analogous curves were obtained for cobalt, barium, lithium, and copper monoferrites. Analysis of the results indicat that temperature magnetic hysteresis in monoferrites is associated with the same processes as those occurring in metallic ferromagnets. In individual cases, specifically that of copper ferrite, the shape of the temperature magnetic hysteresis curve may be affected by the presence in the ferrite of different magnetic phases. Orig.art.has: 4 figures and 1 table.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics, Siberian Division, Academy of Sciences, SSSR)

Card 2/4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, G. K., Cand Phys-Math Sci — (diss) "Study of the contact potential of cadmium sulfide and the nature of its change under illumination." Leningrad, 1959. 9 pp (Len Order of Lenin State U im A.A. Zhdanov). 150 copies (KL, 39-59, 101)

7

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, G.K.

Change of the contact potential of cadmium sulfide due to illumination.
Zhur.tekh.fiz. 28 no.12:2657-2668 D '58. (MIRA 12:2)

1. Leningradskiy gosudarstvennyy universitete, Kafedra elektrofiziki.
(Cadmium sulfide) (Photoconductivity)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, N. YE.

KAPITONOV, I.T.; ZYRYANOV, N.Ye., master lesa.

S-80 tractors engaged in moving lumber. Les.prom. 35 no.4:
5-7 Ap '57. (MLRA 10:5)

1. Starshiy nauchnyy sotrudnik Ural'skogo filiala TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki (for Kapitonov).
(Lumbering) (Caterpillar tractors)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, M.N.

Reaction of indium oxide and sulfates of bivalent and trivalent iron. Izv.Sib.otd.AN SSSR no.9:165-168 '60. (MIRA 13:11)

1. Irkutskiy sovnarkhoz i Irkutskiy nauchno-issledovatel'skiy institut redkikh metallov.
(Indium oxide) (Iron sulfates)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ACCESSION NR: AP4004701 S/0126/63/016/005/0798/0799

AUTHORS: Zy*ryanov, P. S.; Silin, V. P.

TITLE: Quantum theory of transfer phenomena in an electron gas under the influence of a magnetic field

SOURCE: Fizika metallov i metallovedeniye, v. 16, no. 5, 1963, 798-799

TOPIC TAGS: electron gas, transfer phenomenon, quantum theory, magnetic field transfer, magnetic field, phenomenon, nonhomogeneous space, space temperature, Fermi gas, quantizing magnetic field, spatial inhomogeneity, Fermi energy

ABSTRACT: The transport phenomena in an electron gas with weak nonhomogeneity in temperature T and chemical potential ζ, under homogeneous magnetic and electric fields, are studied. Expressions for the current flow and heat flow vectors are derived in terms of a linear combination of electric field gradient, chemical potential gradient, and temperature gradient relative to the x-coordinate. The gas is assumed collisionless. It is found that the electric field gradient and chemical potential gradient oppose each other in both the current flow and heat flow expressions. Orig. art. has: 8 equations.

Card 1/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ACCESSION NR: AP4004701

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of the Physics of Metals AN SSSR); Fizicheskiy institut im. L. N. Lebedeva AN SSSR (Institute of Physics AN SSSR)

SUBMITTED: 03Jun63 DATE ACQ: 03Jan64 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ACCESSION NR: AP4019218 S/0056/64/046/002/0537/0543

AUTHORS: Zy*ryanov, P. S.; Silin, V. P.

TITLE: Quantum theory of transport phenomena in strong magnetic fields

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 537-543

TOPIC TAGS: transport theory, transport quantum theory; thermomagnetism, galvanomagnetism, collisionless flow, collisionless electric current, collisionless heat flow, particle level quantization, Einstein diffusion relation, Landau diamagnetism, chemical potential gradient, temperature gradient, electric field gradient

ABSTRACT: Expressions are considered for the electric and heat currents due to electrons in a magnetic field strong enough to require that quantization of the particle levels in the field be taken into account. The expressions derived do not depend on the collisions be-

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ACCESSION NR: AP4019218

tween the electrons and the scatterers; in this case the result obtained is the same as that of A. I. Ansel'm and B. M. Askerov (FTT, v. 3, 3668, 1961). In addition, the use of the method of kinetic equations to obtain collisionless particle and heat flows is also considered. The currents produced by statistical forces proportional to the gradients of the temperature and the chemical potential are first evaluated and then added to the currents induced by the electric field. The violation of Einstein's diffusion relations in the case when the quantization of the orbital electronic motion is essential is discussed and is shown to be due to Landau diamagnetism. Orig. art. has: 19 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

SUBMITTED: 25May63 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

YURKOV, V.N., inzh.; ZYRYANOV, T.P., inzh.; KOROGOD, G.A., tekhnik; BELYASHOV, V.N., inzh.

Working capacity of rod-type timber joints. Shakht. stroi. no.8:21-25 Ag '60. (MIRA 13:11)

1. Altayskiy gorno-metallurgicheskiy nauchno-issledovatel'skiy institut (for Yurkov). 2. Maslyanskiy rudnik Zyryanovskogo svintsovogo kombinata (for Zyryanov, Korogod). 3. Glubochanskoye shakhtostroyupravleniye (for Belyashov).

(Mine timbering)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4

ZYRYANOV, T.P., inzh.; TURGAMBAYEV, B.M., inzh.; BELYASHCV, V.N., inzh.; YURKOV, V.N., inzh.

Use of rock ammonite in Altai Mountain mines. Shakht.stroi. 4 no.2:19-20 F '60. (MIRA 13:5)
(Altai Mountains--Mining engineering)
(Explosives)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065810014-4"